

REMARKS

I. STATUS OF THE CLAIMS

Claims 1 – 12 are pending.

Claim 1 has been amended to incorporate the elements of original claim 2.

Claim 2, accordingly, has been cancelled. No new subject matter has been added.

II. INFORMALITIES

A. OATH

The Office asserts that the oath is defective, allegedly because the city and either state or foreign country of residence of each inventor is not identified. Applicants respectfully note that the relevant information is provided in the Application Data Sheet of record. Accordingly, the oath is compliant.

B. SPECIFICATION

The disclosure has been objected to as being informal for describing the invention in terms of the claims. Page 7 of the specification has been amended to replace reference to the claims with the text of the claims. Support for the proposed amendments to the specification can be found in original claims 2 – 8 and 11. Accordingly, this objection is now moot.

C. CLAIMS

Claim 2 has been objected to as lacking proper grammar. Claim 2 has been cancelled, and accordingly, this objection is now moot.

III. ANTICIPATION REJECTIONS

Claims 1, 3 – 6, and 8 – 12 have been rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by at least one of US 5,418,682, JP 2000-86671, or JP 10-87574.

Claim 1 has been amended to incorporate the elements of claim 2 which is recognized as being novel over the prior art of record. Claims 3 – 12 include all of the elements of claim 1. Therefore, this rejection is respectfully traversed.

IV. OBVIOUSNESS REJECTIONS

Claims 1 – 7 and 9 – 11 have been rejected under 35 U.S.C. § 103(a) as allegedly being obvious over US 6,852,229 (Mehnert) in view of US 6,853,472 (Warner). More particularly, the Office states that Mehnert teaches a method for producing a quaternary ammonium tetrafluoroborate ionic liquid by mixing an alkali metal tetrafluoroborate in acetonitrile at room temperature. The Office acknowledges that Mehnert does not teach that the quaternary ammonium can be the claimed tetraalkyl ammonium. However, the Office asserts that Warner teaches that tetraalkylammonium forms an ionic liquid and, thus, one skilled in the art would have combined these teachings to arrive at the claimed invention. This rejection is respectfully traversed for at least the reason that Mehnert nor Warner teach or suggest the use of a tetraalkylammonium tetrafluoroborate electrolyte.

To render a claimed invention *prima facie* obvious, a combination of references must teach each and every element of the claim. *In re Royka*, 490 F.2d 981 (CCPA 1974). Here, the cited combination of references does not teach at least two elements of the claimed invention and, thus, does not render the claim obvious.

Here, neither Mehnert nor Warner teach or suggest the use of an tetraalkylammonium tetrafluoroborate compound. The Office readily admits that Mehnert does not tetraalkylammonium tetrafluoroborate, but instead only teaches compositions having a quaternary ammonium cation and a tetrafluoroborate anion. The Office alleges that Warner's teaching of an ionic liquids having a tetraalkylammonium cation suggest that ionic liquids are formed between tetraalkylammonium cation and tetrafluoroborate anion. Applicants respectfully disagree with this conclusion.

It is commonly understood that an ionic liquid is an ionic salt that has melting temperature of 100 °C or sometimes less. The dominant force in ionic liquids is the weak Coulombic Attraction between anions and cations ions. Thus,

the Coulombic Attraction of a salt varies with the choice of both the cation and the anion. The presence of a single cation (or anion) does not demonstrate or even suggest the existence of an ionic liquid. What matters in the formation of an ionic liquid is the specific combination of cations and anions. It is important to note that none of the ionic liquids described in Warner possess a tetraalkylammonium cation and a tetrafluoroborate anion. Instead, Warner indicates that tetraalkylammonium cations for ionic liquids with sulfonyl anions.

Since neither Mehnert nor Warner teach or suggest a tetraalkylammonium tetrafluoroborate electrolyte, their combination does not render the claimed invention obvious. For at least this reason, the Office's rejection is respectfully traversed.

V. CONCLUSION

Applicants believe that this correspondence constitutes is fully responsive to the pending Office Action. In view of the abovementioned reasons and the proposed claim amendments, Applicants assert that the claims are in condition for allowance. The Office is invited to contact the undersigned to further the prosecution of this application in any way.

Respectfully submitted,

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